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(72) Inventor: **Choi, Kyung-Ju**
Louisville, Kentucky 40241 (US)

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(74) Representative: **Schmitz, Jean-Marie et al**
Denнемeyer & Associates S.A.,
P.O. Box 1502
1015 Luxembourg (LU)

(71) Applicant: **AAF International**
Louisville, Kentucky 40208 (US)

(54) **Melt blowing method for forming a fibrous layered web of filter media, melt blowing apparatus and a layered filter media web product**

(57) A method, die apparatus and product wherein a layered web of melt blown fibrous filter media is produced by a unitary die including several die sources with facing layers of the fibrous filter media being attenuated

by opposed fluid streams at preselected included angles and with the fiber layers being free from bonding together and with the fibers in each layer being minimally bonded.

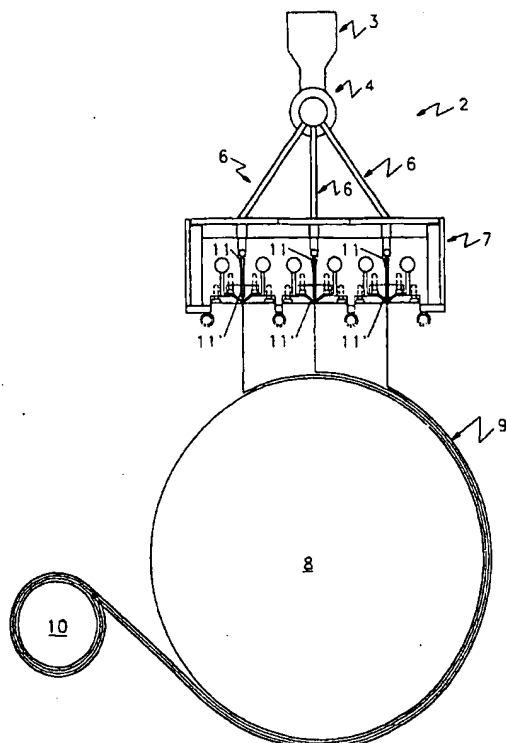


FIG. 1



European Patent
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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 4 925 601 A (VOGT CLIFFORD M ET AL) 15 May 1990 (1990-05-15) * figures 1,2 *	1,2	D04H1/56 D04H13/00 D01D4/02 D01D5/098 B29C47/30
A	US 4 526 733 A (LAU JARK C) 2 July 1985 (1985-07-02) * column 2, line 5 - line 14; figures US51,2 *	1-29	
A	EP 0 474 422 A (CHICOPEE CORP) 11 March 1992 (1992-03-11) * figure 1 *	1-29	
A	EP 0 388 036 A (ACCURATE PROD CO) 19 September 1990 (1990-09-19) * figure 3 *	1-29	
A	US 5 248 247 A (ROOCK DANIEL ET AL) 28 September 1993 (1993-09-28) * figure 8 *	1-23	
D,A	US 5 236 641 A (FETCKO JOHN T ET AL) 17 August 1993 (1993-08-17) * figure 5 *	1-29	TECHNICAL FIELDS SEARCHED (Int.Cl.6) D01D B29C B01D D04H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 September 2000	Examiner Barathe, R
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 97 63 0041

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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25-09-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4925601 A	15-05-1990	NONE	
US 4526733 A	02-07-1985	AU 561848 B AU 2130683 A CA 1212804 A DE 3341590 A FR 2536094 A GB 2130260 A,B GB 2159092 A,B NL 8303899 A PH 20012 A ZA 8308159 A	21-05-1987 24-05-1984 21-10-1986 17-05-1984 18-05-1984 31-05-1984 27-11-1985 18-06-1984 28-08-1986 27-06-1984
EP 0474422 A	11-03-1992	AU 8275691 A JP 4257306 A PT 98796 A	05-03-1992 11-09-1992 30-11-1993
EP 0388036 A	19-09-1990	US 4986743 A CA 2010860 A,C DE 69007659 D DE 69007659 T JP 2269806 A JP 2819423 B KR 148376 B	22-01-1991 13-09-1990 05-05-1994 13-10-1994 05-11-1990 30-10-1998 01-12-1998
US 5248247 A	28-09-1993	DE 4036734 C IT 1251996 B JP 5195305 A	30-01-1992 27-05-1995 03-08-1993
US 5236641 A	17-08-1993	AU 659587 B AU 2659392 A CA 2117175 A EP 0604545 A JP 2892157 B JP 6510574 T KR 129863 B WO 9305212 A	18-05-1995 05-04-1993 18-03-1993 06-07-1994 17-05-1999 24-11-1994 08-04-1998 18-03-1993

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82